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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,620	03/23/2005	Masanobu Awano	258963US2PCT	5101
22850 7590 12/16/2009 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER WILKINS III, HARRY D				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
12/16/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/506,620

Applicant(s)

AWANO ET AL.

Examiner

Harry D. Wilkins, III

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 1-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 November 2009 has been entered.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file. Applicant has made a certified English translation of JP 2002-073089 of record in the Application in an attempt to overcome the prior art rejections. See MPEP § 201.15.
3. However, in order for Applicant to be granted the earlier effective filing date, the claims as a whole, as currently presented, must be supported by the earlier application in the context of 35 U.S.C. 112, 1st paragraph.
4. After a review of the certified translation, it appears that the currently pending claims, namely claim 19, includes features not supported by the earlier foreign application. Such features include the "ionization reaction inhibition" properties of the layer, and also use of such layer as an intermediate or mixed layer in the chemical reactor.

5. Therefore, Applicant's claim for an earlier effective filing date based on foreign priority to JP 2002-073089 is denied due to failure of the prior application to provide written support for the presently pending claims.

Claim Interpretation

6. Due to apparent disagreement on interpretation of claim scope, the examiner will set forth his interpretation of the claimed subject matter. Claim 19 is interpreted as having a chemical reaction component, such as the three layer reaction component as set forth in claim 21, over which a surface coating layer which is "configured to inhibit an ionization reaction of adsorbed oxygen" is disposed. As per Applicants' own specification at pages 46-48, the surface coating layer may be made of an ion conductor, a mixed conductor or an insulator. Although Applicants appear to be arguing that the prior art does not teach the structure set forth in figure 8 and example 12 disclosed herein, wherein the surface coating layer was made from yttria-stabilized zirconia only, the claims as written are not limited to such structure.

7. Thus, claims 19-21, as a whole, are interpreted to require the following layers, in order, from bottom to top:

- a. Oxidation phase (described at page 46 and in example 12), composed of a substance having both electron conductivity and ion conductivity, such as platinum;
- b. Ion-conductive phase (described at page 45), composed of a substance having ionic conductivity, such as yttria (or scandia) stabilized zirconia or gadolinium oxide stabilized ceria;

- c. Reduction phase (described at pages 43-45), composed of a substance of mixed conductivity, such as platinum or palladium mixed with yttria stabilized zirconia; and,
- d. Surface coating layer (or ionization reaction inhibition layer) (described at page 46-48), composed of an ion conductor, a mixed conductor or an insulator (also set forth this way by claim 20). Such composition includes yttria stabilized zirconia (ion conductor), mixed platinum or other conductor with yttria stabilized zirconia (mixed conductor) and alumina (insulator).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 19-25 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Awano et al (US 6,818,107).

The applied reference has common inventors and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention

disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

See example 1, col. 6.

The structure taught by Awano et al included (a) an anode (oxidation phase) made of platinum, (b) an electrolyte (ion conduction phase) made of yttria stabilized zirconia, (c) a lower cathode (reduction phase) made of mixed platinum and yttria stabilized zirconia and (d) an upper cathode (surface coating layer) made of mixed nickel oxide and yttria stabilized zirconia.

Regarding claim 22, this feature relates to the manner of using the claimed structure, and, per MPEP 2114, has not been given patentable weight except to the extent that the apparatus of Awano et al was capable of operating in the claimed fashion.

10. Claims 19-25 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Awano et al (JP 2003-033646)

See example 1, para. [0018].

The structure taught by Awano et al included (a) an anode (oxidation phase) made of platinum, (b) an electrolyte (ion conduction phase) made of yttria stabilized zirconia, (c) a lower cathode (reduction phase) made of mixed platinum and yttria stabilized zirconia and (d) an upper cathode (surface coating layer) made of mixed nickel oxide and yttria stabilized zirconia.

Regarding claim 22, this feature relates to the manner of using the claimed structure, and, per MPEP 2114, has not been given patentable weight except to the extent that the apparatus of Awano et al was capable of operating in the claimed fashion.

11. Claims 19-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Awano et al "Low Current Density Electrochemical Cell for NO Decomposition" (2001).

Awano et al teach a chemical reactor for subjecting a treatment substance (NO) to a chemical reaction, wherein a surface coating layer (mixed NiO-YSZ) is formed on the chemical reaction component surface (cathode) and which inherently inhibits the ionization reaction of adsorbed oxygen on the surface of a chemical reaction component (cathode) where the chemical reaction of the treatment substance (NO) proceeds. The structure includes an ion conductor phase (YSZ) and an oxidation phase (anode) in addition to the reduction phase (cathode).

The surface coating layer made from mixed NiO-YSZ is made from a material identical to the material utilized by Applicant (see example 12). Thus, it is expected by one of ordinary skill in the art to have the same inhibition properties as claimed.

Regarding claim 20, the surface coating layer was a mixed conductive substance.

Regarding claim 22, the treatment substance was NO, which was reduced into oxygen ions in the reduction material (NiO) which ions were then conducted in the ion-conductive material (YSZ).

Regarding claim 23, since Awano et al teach using the same material for the surface coating layer as is disclosed by Applicant, it is expected that it would inherently be made of a material that blocks the conduction path by which current supplied from outside to the chemical reaction component (cathode) reaches the adsorption point of oxygen molecules.

Regarding claim 24, the surface coating layer was the top most layer on the chemical reactor of Awano et al.

Double Patenting

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thornton*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 19-25 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 6,818,107. Although the conflicting claims are not identical, they are not patentably distinct from

each other because the claims of the '107 patent include a lower cathode (reduction phase) made of a mixture of electron conductive phase (majority) and ion conductive phase and an upper cathode (surface coating layer) made of a mixture of ion conductive phase (majority) and electron conductive phase, which structure has the functions as set forth in claims 19-25.

Response to Arguments

14. Applicant's arguments filed 17 November 2009 have been fully considered but they are not persuasive. Applicant has argued (1) that priority should be granted to foreign application JP 2002-073089, thereby overcoming the first two rejection grounds and (2) that the article "Low Current Density Electrochemical Cell for NO Decomposition" does not teach a layer having the ionization reaction inhibition layer.

15. In response to (1), as set forth above, the claim for foreign priority has been considered, but not granted, because the prior application does not fully support the claims as currently presented.

16. In response to (2), as set forth above, the mixed surface layer of NiO and YSZ taught by Awano et al in "Low Current Density Electrochemical Cell for NO Decomposition" is identical to the composition for the surface coating layer provided in Applicant's example 12. This layer, a mixed conductive substance, falls within the compositions designated as suitable for the ionization inhibition layer, and therefore, is expected to inherently possess such property.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jenni Michener can be reached on 571-272-1424. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

hdw